Remarks

Applicants respectfully request consideration in view of the foregoing amendments and the following remarks. Claims 1-25 are pending in the application. This response amends claims 1, 2 and 12, and adds new claim 26. Claim 2 is amended to correct a typographical error. Applicants thank the Examiner for allowing claims 17-25. With entry of this amendment, claims 1-26 are in the application.

Rejections under 35 U.S.C. § 103

The Action rejects claims 1, 12 and 14 under 35 U.S.C. § 103(a) over U.S. Patent App. Pub. 2004/0090625 to Fischer et al. (Fischer) in view of U.S. Pat. No. 6,796,195 to Povey et al. (Povey). Applicants respectfully traverse this rejection.

Independent Claim 1

Amended claim 1 is directed toward:

> A method comprising monitoring a fermentation process of a population of cells in a suspension or slurry by detecting ultrasound backscattered from the cells in the suspension or slurry, *wherein the cells are selected from the group consisting of bacteria, yeast cells, fungi, and mammalian cells.*

For example, the original specification states:

> In particular, a variety of industrial processes rely on the biological functioning of cells. For example, industrial scale fermentation processes are encountered in various pharmaceutical and chemical industries, and typically involve *fungi, bacteria, or mammalian cells* that biologically convert raw materials (nutrient broth) into a desired product.

See page 2, lines 2-5 (emphasis added). Fischer and Povey do not, singularly or in combination, teach or suggest the method of claim 1. The Action at 5 indicates that claims 7 (the cells are bacteria) and 8 (the cells are yeast cells) contain allowable subject matter. As similar subject matter has been incorporated into claim 1, claim 1 is allowable over Povey and Fischer. Claims 2-11 depend from claim 1 and are allowable at for least the reasons claim 1 is allowable, as well as for the unique combinations of features recited therein. Applicants respectfully request withdrawal of the rejection.

Independent Claim 12

Amended claim 12 is directed toward:

> A method comprising:
> monitoring fermentation occurring in a fermentor by detecting ultrasound backscattered from cells in a fermentation broth as a function of time; and
> *contemporaneously measuring an ultrasonic attenuation of the cells and the broth*, wherein the detecting is with a transducer positioned inside the fermentor.

This amendment incorporates a feature similar to one found in original claim 2. Fischer and Povey do not, singularly or in combination, teach or suggest the method of claim 12. The Action at 5 indicates that original claim 2 contains allowable subject matter. As claim 12 now contains similar subject matter, claim 12 is also allowable over Fischer and Povey. Claims 13-16 depend from claim 12 and are allowable for at least the reasons claim 12 is allowable, as well as for the unique combinations or features recited therein. Applicants respectfully request withdrawal of the rejection.

New Claim 26

New claim 26 is directed toward:

> A method comprising:
> monitoring a fermentation process of a population of cells in a suspension or slurry by detecting ultrasound backscattered from the cells in the suspension or slurry; and
> substantially contemporaneously measuring an ultrasonic attenuation of the cells and the suspension or slurry.

This claim is a version of original claim 2, rewritten to include the features of its base claim (original claim 1). The Action at 5 indicates that original claim 2 would be allowable if rewritten in independent form to include the features of its base claim. Accordingly, new claim 26 is allowable, and Applicants request such action.

Conclusion

In light of the foregoing remarks, all claims are in condition for allowance. Should any issues remain, the Examiner is requested to call the undersigned attorney.

Respectfully submitted,

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